

Claims

We claim:

1. A method selecting a circuit to service an application request to transmit data over a network, the network having a plurality of circuits that include at least one low bandwidth circuit and one high bandwidth circuit, comprising:

measuring, for each of circuits an average utilization if the application request is assigned to the circuit;

assigning the application request to the high bandwidth circuit if the average utilization is less than a predetermined threshold;

assigning the application request to the low bandwidth circuit if the average utilization is less than one, and otherwise

declining the application request.

2. The method of claim 1 wherein the predetermine threshold is one minus a guard bandwidth for preventing saturation of the high bandwidth circuit.

3. The method of claim 1 wherein the average utilization for each circuit is determined as a probability, and further comprising:

selecting a particular circuit having a smallest probability;

assigning the application request to the selected circuit if the selected circuit is the high bandwidth circuit and the average utilization is less than a predetermined threshold;

assigning the application request to the selected circuit if the selected circuit is the low bandwidth circuit and the average utilization is less than one, and otherwise

declining the application request.

4. The method of claim 3 wherein the network includes a plurality of high bandwidth circuits.
5. The method of claim 3 wherein the probability is based on a mean data arrival rate μ_s and a standard deviation σ_s of the data arrival rate of traffic with an identical application type as the application request, and with a mean data rate μ_w and a standard deviation σ_w of aggregate traffic on the high bandwidth circuit.
6. The method of claim 5 wherein the mean data arrival rate μ_s and the standard deviation σ_s of the data arrival rate of traffic with the identical application type as the application request, and with the mean data rate μ_w and the standard deviation σ_w of aggregate traffic on the high bandwidth circuit are stored in a table.
7. The method of claim 1 wherein the an average utilization U_h 133 of the high bandwidth circuit within the last M time slots, where M is an integer.
7. The method of claim 3 wherein the probability is in a form of a Gaussian distribution.
8. The method of claim 3 the average utilization over predetermined number of preceding time slots using a taps of a delay line.
9. The method of claim 1 wherein a full utilization is measured as one, and no utilization is measured as zero.

10. A system selecting a circuit to service an application request to transmit data over a network, the network having a plurality of circuits that include at least one low bandwidth circuit and one high bandwidth circuit, comprising:

a circuit analyzer configured to measure, for each of circuits an average utilization if the application request is assigned to the circuit; and

an admission control configured for assigning the application request to the high bandwidth circuit if the average utilization is less than a predetermined threshold, assigning the application request to the low bandwidth circuit if the average utilization is less than one, and otherwise declining the application request.

11. The system of claim 1 wherein the assigning is performed by a switch configured for connecting the low and high bandwidth circuits to the application request.